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ABSTRACT

C. M. LINDVALL'S INTRODUCTION TO THE IPI PROJECT IS BASED--AS IS THE PROJECT ITSELF--ON ROBERT GLASER'S NATIONAL SOCIETY FOR THE STUDY OF EDUCATION (NSSE) YEARBOOK CHAPTER ENTITLED 'THE DESIGN OF INSTRUCTION'. THE PROJECT CONCERNS ITSELF WITH IDENTIFYING THE PROPOSED STUDENT TERMINAL BEHAVIORS AND STRUCTURING THEM INTO SOME MEANINGFUL TOTAL CURRICULUM; DIAGNOSING THE STUDENT'S PREINSTRUCTIONAL BEHAVIOR; DEVELOPING AND EVALUATING SEQUENTIAL OBJECTIVES IN THE CARRYING OUT OF THE INSTRUCTIONAL PROCESS, AND MEASURING LEARNING OUTCOMES. THIS LAST STEP IS NOT DEALT WITH IN THE IPI PAPERS. (GO)

C. M. Lindvall
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Instructional Design

A major aspect of work on the IPI Project that has begun to evolve during this year is the development and refinement of curricula in the various areas in which the project has elected to concentrate its efforts. Although this curriculum development work was not emphasized during the first few years of the project, the current phase of work on IPI, centering on the improvement of the effectiveness and efficiency of procedures has made this emphasis a necessity. This work on curriculum development includes the identification of relevant content, the specification of behavioral objectives, the structuring of such objectives into meaningful sequences of units and levels, the sequencing of objectives within unit, the development of instructional materials, and the construction of the necessary tests. In this total task the IPI staff attempts to follow procedures that have arisen from research and development efforts in the behavioral sciences and from the thinking of certain leaders in the field of instructional design. The papers and other materials assembled in this packet represent an effort to bring together certain suggestions that serve to provide a first draft of a description of an IPI approach to this type of instructional design.

The basic outline of the approach to instructional design which the IPI Project is endeavoring to follow is provided by Glaser in his NSSE Yearbook chapter "The Design of Instruction."¹ This should be among

¹Robert Glaser, "The Design of Instruction," The Changing American School, 65th Yearbook of the National Society for the Study of Education, Part II (Chicago, Illinois: University of Chicago Press, 1966), pp. 215-242. (Also Reprint 5, Learning Research and Development Center Publications Series.)

the first things studied by any person attempting to acquaint himself with IPI curriculum development procedures. The steps in instructional design

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suggested by Glaser may be partially outlined as follows: (Material in parentheses represents an attempt to relate Glaser's steps to the attached illustrative papers.)

I. Analyzing the Characteristics of Subject-Matter Competence.

- a. The logical analysis and structuring of the subject-matter domain, the "content repertoire"
- b. The analysis and structuring of the behaviors to be acquired, the "component repertoire"

(Step I involves the careful identification of the terminal behaviors that the student is to achieve and the structuring of such behaviors into some meaningful total curriculum. The attached papers and illustrations dealing with the criteria for the statement of specific objectives and those dealing with the "flow-chart" analysis of a terminal behavior are aspects of carrying out Step I.)

II. Diagnosing Preinstructional Behavior

". . .the assessment of preinstructional behavior is considered to be the determination of an entering behavior repertoire which the instructional process is designed to guide and modify. . ." (p. 225)

(Step II involves, among other things, identifying the entering behaviors or abilities which it is assumed that a student has before he starts work in some given instructional sequence. In this sense, this step serves to identify the "lowest" behavioral objective(s) in the sequence or structure of such objectives that build up to a terminal behavior for a given "unit" of instruction. The development of these sequences or structures is described under Step III, below. Step II also relates to the pretesting of students and the Glaser outline suggests additional types of pretesting information to be sought in addition to that on pre-unit command of objectives within the unit.)

III. Carrying Out the Instructional Process.

(This step involves, first of all, determining the sequence of behaviors that a learner should probably acquire in progressing from the entering behavior to the terminal behavior. This is related to the development of "component structures" or the sequences and structures of specific instructional objectives as these are discussed in the attached papers "The Development and Evaluation of Sequential Objectives" and "Planning of Objectives, Learning Sequences, and Units for IPI." This development of component structures is illustrated by several charts of such structures, at least one for each IPI content area. Of course, carrying out the instructional process involves much more than this. It must also deal with actual lesson development, for example. For some initial guidelines on lesson development the reader is directed to:

- (1) Klaus, David J., "An Analysis of Programming Techniques," in R. Glaser (Ed.), Teaching Machines and Programmed Learning, II, Data and Directions, the NEA, 1965, pp. 118-161.
- (2) Taber, Julian I., Robert Glaser, and Halmuth H. Schaefer, Learning and Programmed Instruction, Reading, Massachusetts: Addison-Wesley Publishing Co., 1965 chapter).

IV. Measuring Learning Outcomes

(This step is not dealt with in these papers.)

The Attached Papers

The attached papers (mentioned in the above outline) represent products of working sessions of IPI staff members. They are rough drafts of materials intended to illustrate and elaborate upon a current version of a desired IPI approach to instructional design (hopefully derived from the Glaser outline). Obviously, they have certain inadequacies, but these can only

be identified and corrected as we learn more about procedures and their application. They are intended to serve as a vehicle for learning experiences for all IPI staff members, including both those who read these documents and those who are developing them.